IN THE CLAIMS:

Please amend the claims as follows:

1.(Currently amended) A method for analyzing the performance of a system, comprising the steps of:

directing collimated light from at least one vertical cavity surface-emitting laser (VCSEL) towards identically encoded portions representing unconnected lines of a bar code formed on planar surfaces formed on and located near inner perimeter on inner surfaces of two transparent disks independently rotatable on two shafts, said two transparent disks each representing input and output mechanisms of the ~~sytsem~~system;

transmitting a portion of the light towards at least one of a sensor plate or detector after said portion of the light passes through the transparent disks and~~from~~ said encoded portions; and

detecting a transmitted portion of the light using the at least one of the sensor plate or detector~~; and~~

~~recovering information from said transmitted portion of the light, said information containing performance characteristic data of said system including torque between the two shafts~~.

2.(previously cancelled)

3.(Previously amended) The method of claim 1 wherein said encoded portions comprise a bar code.

4.(Previously amended) The method of claim 1 wherein said encoded portions comprises at least one measuring feature formed on a planar surface of said disks.

5.(cancelled).

6.(cancelled).

7.(Previously amended) The method of claim 1 further comprising the step of:

shaping said encoded portion of said disks to increase transmission of said transmitted light in a particular direction.

8.(Previously amended) The method of claim 1 further comprising the step of:

transmitting at least one light beam from said encoded portions of said disks to interact with at least one other light beam to form Moirè fringes on a sensor.

9.(original) The method of claim 1 further comprising the step of:

assessing said system utilizing said performance characteristic data.

10.(original) The method of claim 9 further comprising the step of:

generating an electrical feedback signal from information recovered from said transmitted portion of the light; and

providing said electrical feedback signal to an input of said system, thereby improving said performance characteristic data of said system.

11.(Cancelled)

12.(Currently amended) The apparatus of claim ~~11~~33 further comprising:

recovery mechanism that recovers information about a performance characteristic of said mechanical system from the at least one detector or sensor plate.

13.(cancelled).

14.(Currently amended) The apparatus of claim ~~11~~33 wherein the directing element comprises an optical lens.

15.(previously cancelled)

16.(Currently amended) The apparatus of claim ~~11~~33 wherein said bare-code-like encoded portion ~~of said rotating member~~ comprises a bar code.

17.(Cancelled)

18.(Currently amended) The apparatus of claim ~~17~~34 further comprising:

a sensor for analyzing a signal received by~~from~~ said detection mechanism, thereby monitoring the motion of said Moirè fringes, wherein said sensor~~sensing mechanism~~ is located proximate to said ~~system~~detection mechanism.

19.(Currently amended) The apparatus of claim 18 further comprising:

a collimating lens located proximate said ~~system~~VCSEL, wherein said collimating lens renders ~~said~~the light beam from said ~~light source~~VCSEL into a highly collimated parallel light beam, thereby directing said ~~VCSEL~~highly collimated parallel light beam to intercept said encoded portion on said first rotating member.

20.(previously cancelled)

21.(Currently amended) The apparatus of claim ~~17~~34 wherein ~~at least one~~the light beam transmitted from said VCSEL is rendered highly collimated by a convex collimating lens before said at least one light beam intercepts at least one encoded portion ~~of said first and second rotating members~~.

22.(Currently amended) The apparatus of claim 21 wherein said at least one encoded portion comprises:

a transparent polymer film having parallel lines ~~of~~resembling an opaque bar code imprinted on an upper surface of said transparent polymer film; and

wherein said opaque parallel lines are spaced evenly with a width of a gap formed there between, wherein the width of the gap corresponds to the width of said opaque parallel lines; and

wherein said transparent polymer film is fixed to a rotating member.

23.(Currently amended) The apparatus of claim 22 wherein:

said transparent polymer film comprises a bar code when adhered to a rotating disk~~; and~~

~~wherein said bar code is adhered to a planar surface of a rotating member~~.

24.(Currently amended) The apparatus of claim 23 wherein:

said light beam intercepts said first and second encoded portions ~~of said rotating members~~ at an angle of incidence of about 90°; and

wherein said light beam carries an image of said bar code after being transmitted over said encoded portions ~~of said first and second rotating members~~.

25.(Currently amended) The apparatus of claim 22 wherein an image from said first encoded surface interacts with an image of said second encoded surface after said light beam is transmitted through said second ~~rotating~~encoded surface to produce Moirè fringes.

26.(Previously amended) The apparatus of claim 22 wherein Moirè fringes are observed on a sensor.

27.(Previously amended) The apparatus in claim 26 wherein said sensor is located at a Talbot distance from a point where said light beam exits a bottom of said encoded surface of said second rotating member.

28.(Currently amended) The apparatus of claim ~~17~~34 wherein said detector is located on a sensor.

29.(Currently amended) The apparatus in claim ~~17~~34 wherein said encoded portion of the first rotating member is shaped to increase said transmitted light in a particular direction.

30.(Currently amended) The apparatus of claim ~~17~~34 wherein said encoded portion of the first rotating member is shaped to form an optical encoder for encoding information representing performance characteristics of said system.

31.(Currently amended) The apparatus of claim ~~17~~34 wherein said encoded portion of the first ~~rotating member~~disk is provided as a vernier on said ~~rotating member~~first disk to increase accuracy for sensing motion of rotating members in the mechanical system~~thereof~~.

32.(Currently amended) The apparatus of claim ~~17~~34 wherein said encoded portion of the first ~~rotating member~~disk comprises features recessed into a surface or edge of said ~~rotating member~~disk.

Please add the following new claims:

33.(New) An apparatus for analyzing the performance of a mechanical system including independently rotatable input and output shafts with ends being separated by and coupled to a torsion bar, said apparatus comprising:

two transparent disks independently attached near the ends of the input and output shafts, wherein each of said transparent disks include inward facing surfaces, said inward facing surface forming a gap between the two transparent disks based on their placement on the ends of the input and output shafts;

bar-code-like encoded portions formed on the inward facing surfaces of the two transparent disks;

at least one directing element that directs light from a vertical cavity surface-emitting laser (VCSEL) through the two transparent disks in order to intercept the bar-code-like encoded portions, wherein a portion of light is transmitted through the bar-code-like encoded portions of the two transparent disks; and

at least one detector or sensor plate to receive the transmitted portion of light.

34.(New) An apparatus for detecting the relative motion between at least two rotating members in a mechanical system, comprising:

a vertical cavity surface-emitting laser (VCSEL) for generating a light beam;

a first encoded portion representing unconnected lines of a bar code located on a surface of a first transparent disk, said first encoded portion facing a second encoded portion also representing unconnected lines of a bar code located on a surface of a second transparent disk, said first and second encoded portions used for the transmission of images towards at least one of a sensor plate or detector that are created using the light beam; and

at least one detection mechanism comprised of at least one sensor plate or photodetector for receiving the light beam, wherein said detection mechanism is located proximate to said mechanical system opposite the VCSEL, and wherein the light beam transmitted by the VCSEL travels through the transparent disks to the detection mechanism;

wherein the light beam can be used to detect Moirè fringes formed as a result of the interaction of the images from said first and second encoded portions.